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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.        | CONFIRMATION NO.       |
|---|-------------|----------------------|----------------------------|------------------------|
| 10/580,324  | 05/18/2007  | Guillaume Bouche     | S1022.81158US00            | 5686                   |
| 46329   | 7590        | 05/26/2009           |                            |                        |
| STMicroelectronics Inc.<br>c/o WOLF, GREENFIELD & SACKS, P.C.<br>600 Atlantic Avenue<br>BOSTON, MA 02210-2206 |             |                      | EXAMINER<br>AHMED, SELIM U |                        |
|   |             |                      | ART UNIT<br>2826           | PAPER NUMBER           |
|   |             |                      | MAIL DATE<br>05/26/2009    | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/580,324             | BOUCHE, GUILLAUME   |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | SELIM AHMED            | 2826                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,6 and 11-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6 and 11-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Applicant's response filed on 02/20/2009 is acknowledged. Applicants have amended claims 1, 5, 6; canceled claims 4, 7-10; and added new claims 11-17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

#### ***Claim Objections***

2. Claim 1 is objected to because of the following informalities:  
  
In line 2, claim 1 recites, "...a upper portion of the substrate..." whereas it should read, "...an upper portion of the substrate..."  
  
Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-3, 5, 6, 11-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 2, 6 recite the limitations "the border" in line 4 and "the bottom of the cavity" in lines 2, 3 respectively. There is insufficient antecedent basis for

Art Unit: 2826

this limitation in the claim. The dependent claims 2, 3, 5, 6, 11-17 inherit the deficiencies.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5, 6, 11, 13-17 are rejected under 35 U.S.C. 102 (b) as being anticipated by Cabuz ET al (US 6,837,476; Cabuz hereinafter).

With regard to claim 1, Cabuz discloses an integrated circuit chip including a pump e.g. Figs. 11, 12, comprising: a cavity 114 formed in an insulating substrate 10 (col. 6, lines 18-39), a upper portion (portion of 116) of the substrate 10 located in the vicinity of the cavity (the upper portion 116 of the substrate 10 is located in the vicinity of the cavity 114) and forming a border of the cavity (any portion of the substrate 10 that 114 is surrounded form “a border of the cavity”); a conductive layer 130 covering the inside of the cavity at least up to the border (Figs. 11, 12); a flexible membrane 120, including a conductive material (col. 6, lines 41-42), placed above the cavity 114 and bearing against the border (e.g. Fig. 10); a dielectric layer (col.6, lines 51-56) that provides insulation between

portions of the conductive layer 130 and of the conductive material of the membrane 120 which are close to each other (col.6, line 51-56); a pumping volume defined between the conductive layer and the flexible membrane (As shown in Figs. 11 & 12, elements 120 and 130 define the volume); a first opening 122 that provides fluid communication to the pumping volume through the conductive layer 130; a second opening 124 positioned near the border of the cavity and that provides fluid communication to the pumping volume (i.e. outlet); and terminals to receive and apply a voltage (e.g. col. 1, lines 52-60) between the conductive layer 130 and the membrane 120 to cause the flexible membrane to move (e.g. Fig. 12).

With regard to claim 2, e.g. Fig. 11 of Cabuz discloses the integrated circuit chip of claim 1, wherein said cavity 114 has substantially the shape of a cup so that the interval between the conductive layer 130 and the membrane 120 progressively increases from the border to the bottom of the cavity 114.

With regard to claim 3, col. 2, lines 12-19, of Cabuz discloses the integrated circuit chip of claim 1, wherein the membrane is in an idle state when no voltage is applied between said terminals, the application of a voltage deforming the membrane by drawing it closer to the conductive layer, the suppression of the voltage bringing the membrane back to its idle state.

With regard to claim 5, e.g. Fig. 7, element 94 of Cabuz discloses the integrated circuit chip of claim 1, wherein the first opening 94 is positioned one substantially at the bottom of the cavity.

With regard to claim 6, e.g. Fig. 11, 12 of Cabuz discloses integrated circuit chip of claim 1, further comprising a ventilating duct (part of 122 within substrate) formed at least in part in the semiconductor substrate of the integrated circuit and that leads up to the first opening 122.

With regard to claim 11, e.g. Fig. 11 of Cabuz discloses the integrated circuit chip of claim 1, further comprising a first ventilating duct (part of 122 within substrate) formed at least in part in the semiconductor substrate 10 of the integrated circuit and that leads to the first opening 122 and a second ventilating duct (part of 124 within substrate) formed at least in part in the semiconductor substrate 10 and that leads to the second opening 124.

With regard to claim 13, e.g. col.6, lines 51-55 of Cabuz discloses the integrated circuit chip of claim 1, wherein the dielectric layer is positioned on the conductive layer 130.

With regard to claim 14, e.g. col.6, line 51-55 of Cabuz discloses the integrated circuit chip of claim 1, wherein the dielectric layer is positioned on the

flexible membrane 120.

With regard to claim 15, e.g. col. 6, lines 41 of Cabuz discloses the integrated circuit chip of claim 1, wherein the flexible membrane is formed of a conductive material.

With regard to claim 16, limitations such as, "provides selective fluid communication with the pumping volume" found to be functional since an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also *In re Swinehart*, 439 F.2d 210 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

With regard to claim 17, e.g. Fig. 12 of Cabuz discloses the integrated circuit chip of claim 16, wherein application of the voltage to the terminals causes the flexible membrane to move toward the conductive layer to close fluid

communication between the second opening 124 and the pumping volume.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cabuz.

With regard to claim 12, Cabuz discloses all of the limitations of claim 1 but does not explicitly disclose that the second opening is larger than the first opening although in Fig.5 of Cabuz shows different sizes of openings i.e. 42, 44a, 44b. Furthermore, col.8, lines 39-41 of Cabuz discloses "A significant diaphragm travel distance may help improve the flow rate that the valve can accommodate, so long as the openings are also appropriately sized". So, it would have been obvious to one having ordinary skill in the art at the time of the invention to appropriately size the openings for specific design needs of the fluid flowing rate.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-3, 5, 6, 11-17 have been considered but are moot in view of the new ground(s) of rejection.



***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SELIM AHMED whose telephone number is (571)270-5025. The examiner can normally be reached on 9:00 AM-6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone

Art Unit: 2826

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SA

/Sue A. Purvis/  
Supervisory Patent Examiner, Art Unit 2826